THE STATUS OF *PILUMNUS TERRAEREGINAE* HASWELL (CRUSTACEA, DECAPODA, XANTHIDAE) AND A GIANT NEW *PILUMNUS* FROM QUEENSLAND WATERS

D. J. G. Griffin
Australian Museum, Sydney

ABSTRACT

Pilumnus terraereginae Haswell is shown to be a species distinct from *P. tomentosus* Latreille; the latter is distributed around southern Australia, the former is known from northeastern and northwestern Australia. *P. terraereginae* is figured and compared with similar species. A new species of *Pilumnus*, allied to *P. sinesis* Gordon from the South China Sea, is described from shallow water in the Bundaberg–Gladstone area, Queensland. The species, which is extremely large, is covered by long stiff yellow hairs and the wrists and hands of the chelipeds bear large, pointed black spines in rows.

Many previous workers on xanthid crabs (Balss, 1933; Sakai, 1965) have considered *Pilumnus terraereginae*, originally described by Haswell (1882a) from Port Molle in Queensland, to be the same species as the apparently widespread Indo-Pacific *P. tomentosus* Latreille. Within Australia the latter has been recorded from several localities around southern Australia (Whitelegge, 1900; Rathbun, 1923). *P. terraereginae*, on the other hand, has been recorded from parts of Queensland (Grant and McCulloch, 1906) and from northwestern Australia (Nobili, 1899). Rathbun (1923) considered the two species separately in her key to Australian species of the genus. Amalgamation of *P. terraereginae* with *P. tomentosus* would result in the one species being accorded a virtually circum-Australian distribution. Only one other species of decapod crustacean, the portunid swimming crab *Portunus pelagicus* Linnaeus, is known to have such a distribution (Griffin and Yaldwyn, 1968). Examination of the type material of *P. terraereginae* and of other recently collected specimens of this species and comparison of them with numerous specimens of *P. tomentosus* shows that the two are distinct.

Between 1963 and 1965, Mrs. Charlotte Wright, then of Lady Elliott Island, Queensland, sent a large collection of decapod Crustacea from the Bundaberg–Lady Elliott

Island area to the Australian Museum. Included in this important collection were two large specimens of a species of *Pilumnus* dredged in shallow water about 30 miles east of Bundaberg. Additional specimens of the same species have been taken near Port Curtis and form part of the Melbourne Ward collection. These specimens represent a new species which is described and illustrated here.

All the material on which this report is based is in the collections of the Australian Museum (Aust.Mus.), Sydney with the exception of two paratypes of the new species of *Pilumnus* which are in the Queensland Museum (Qd.Mus.); the registered number of each lot of specimens is given in brackets. Measurements given are carapace width (c.w.) exclusive of spines, and carapace length (c.l.); they were made to the nearest 0.1 mm with dial calipers.

Family XANTHIDAE

Genus **Pilumnus** Leach

Pilumnus terraereginae Haswell

(Figs. 1, 3a, b; pl. 26)

Pilumnus terraereginae Haswell, 1882a, pp. 752–3; 1882b, p. 68, pl. 1 fig. 5. Nobili, 1899, p. 260. Grant & McCulloch, 1906, p. 15, pl. 1 fig. 1.

[non] *Pilumnus terraereginae*; Grant in Sayce, 1902, p. 154 (?=*P. etheridgei* Rathbun).

TYPES: In the original description no particular specimen is mentioned as the type. Thus, all Haswell's material is to be considered syntypic. From the four dry specimens, in the Australian Museum, mounted on a rectangular glass sheet with a printed label "*Type* PILUMNUS TERRAEREGINAE, *Haswell, Loc.* Port Molle, Queensland" and registered as P730 (this number is also printed on the label), I select as LECTOTYPE the male in the upper right hand corner, c.w. 10·6 mm. The remaining three specimens, all males, c.w. 8·1–10·5 mm, are designated as PARALECTOTYPES. Two of the paralectotypes have legs detached and one has some legs glued next to it.

ADDITIONAL MATERIAL (all in Aust. Mus.)

QUEENSLAND: Port Molle (old collection), 1 male, c.w. 14·9 mm (P2256). Bowen Jetty, Port Denison, from pile, E. H. Rainford, February 1924, 1 female, c.w. 9·6 mm (P7013). Port Denison, E. H. Rainford, July 1918, 3 males, 2 females, c.w. 6·1–15·7 mm (P4207). Masthead Island, Capricorn Group, D. B. Fry, January 1911, 1 male, c.w. 9·7 mm (P2592). Port Curtis, pres. Mrs F. E. Grant, 1 female, c.w. 15·2 mm (G5635). Port Cartwright, A. A. Livingstone, 2.viii.1922, 1 male, 5 females (1 ovig.), c.w. 7·2–14·2 mm, ovig. female 11·7 mm (P6367). Caloundra, A. A. Livingstone, 11–14.viii.1922. 1 male, 1 female, c.w. 8·1, 11·4 mm (P6368).

NEW SOUTH WALES: Near Yamba, mouth of Clarence River, A. A. Cameron, March 1940, 1 ovig. female, c.w. 9·1 mm (P11303). Yamba, pres. A. A. Cameron, 1939, 1 female, c.w. 11·8 mm (P11245). Woody Head, near Yamba, A. A. Cameron and Joyce Allan, 1941, 2 females, c.w. 10·5–19·0 mm (P11358). Angowrie, near Yamba, A. A. Cameron, January 1940, 1 ovig., female, c.w. 12·3 mm (P11263).

DESCRIPTION: Carapace broader than long, anterolateral margins as long as posterolaterals. Surface of carapace, chelipeds and ambulatories with long and short simple

hairs. Dorsal surface of carapace with closely spaced hairs on the anterior half to two-thirds; surface of carapace beneath hairs granular except between level of posterior border of orbits and front; granules round, generally blunt, larger, more pointed and more closely spaced laterally.

Front deflexed, divided by V-shaped notch medially, edge bearing small tubercles which are larger and sharper medially. Orbits with similar closely spaced tubercles dorsally and sharper ones ventrally; external orbital angle short, sharp.

Anterolateral margins with three moderately long, sharp spines behind small external orbital spine, one small sharp tubercle behind, and sometimes in front of, first and second spines; external orbital angle with one small spine behind it.

Subhepatic regions with several small tubercles close to anterolateral margin and a group near lower border of orbit. A group of tubercles at anteromedial corner of pterygostomian regions.

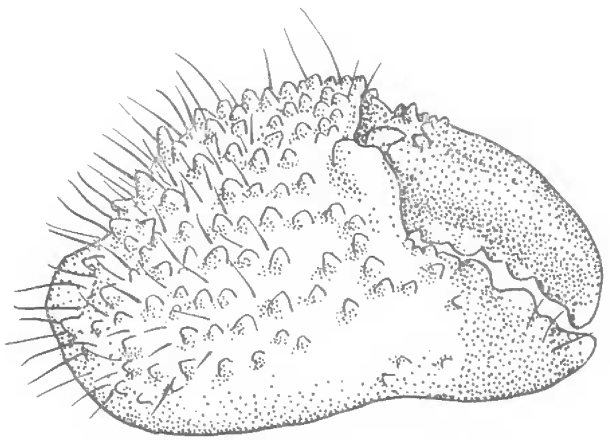

FIG. 1: Major (right) chela of *Pilumnus terraereginae* Haswell (male, c.w. 15·1 mm, Aust. Mus. P4207), outer face.

Third maxillipeds smooth and naked except for minutely granular areas near lateral and towards mediodistal border of merus.

Chelipeds tuberculate and hairy. Merus with a compressed lobe dorsally subdistally, hairs on posterior surface distally. Carpus with moderately dense, long and short hairs and tubercles dorsally and laterally, tubercles larger and more pointed distally. Palm of major chela with long and short hairs on dorsal third or slightly more of outer surface, and large tubercles over all of outer surface, except ventrally, a line of low indistinct

tubercles along middle of ventral surface; tubercles larger and sharper dorsally. Palm of minor chela with long hairs over almost all of outer surfaces and large tubercles more or less in rows over all of outer surface; tubercles larger, less stout and more pointed dorsally. Fingers of both chelae with inner cutting edges strongly toothed; dactyls with tubercles dorsally proximally, those on minor chela extending in three rows along half length of dactyl; fixed finger of major chela with one or two small tubercles proximally, that of minor chela with a row of tubercles extending on to outer surface from palm.

Ambulatory legs without spines or tubercles; merus with hairs on dorsal edge and a few scattered along posterior surface; carpi and following segments with long and short hairs dense on all surfaces.

Abdomen of male with last segment longer than wide, sub-triangular, apically rounded.

First pleopod of male sinuous, slender, tapering, strongly curved apically; aperture terminal, on abdominal surface at end of groove which is wholly abdominal; a line of hairs on medial surface midway along curving across sternal surface to lateral surface at tip, a line of hairs near tip on medioabdominal surface.

REMARKS: This species resembles *P. tomentosus* in the arangement and types of hairs on the carapace, chelipeds and legs and both have the tubercles on the major chela covering most of the outer surface of the palm (see Griffin and Yaldwyn, in press). However, there are very marked differences between the two. In *P. tomentosus*, the anterolateral lobes are broad and bear supplementary spines (a feature mentioned by Latreille (1825, p. 125) in his original description of *P. tomentosus*), the surface of the carapace beneath the hairs is smooth, the front is strongly deflexed, the tubercles on the palms of the chelae are noticeably less closely-spaced dorsally than elsewhere, the ventral edges of the chelae are tuberculate, the ambulatories are more hairy than in *P. terraereginae* and the meri sometimes bear spinules. Finally, *P. terraereginae* is a smaller species than *P. tomentosus* and has a differently shaped first pleopod in the male, the apex being weakly curved distally whereas in *P. tomentosus* the tip is strongly recurved and slender.

P. tomentosus has been recorded from Australia, Indonesia, Samoa and Japan by Balss (1933). The specimen he figures (from Timor) (pl. III figs. 14 ,15) possesses tubercles on the posterior surfaces of the ambulatory meri, a prominent spine on the internal angle of the carpus of the cheliped and the tubercles on the outer surface of the palm of the chela extend on to the ventral edge. None of these three features are found in either *P. terraereginae* or *P. tomentosus*. The Japanese specimens figured by Sakai (1939, pl.54 fig. 1; 1965, pl.78 fig. 2) also possess granular ambulatory meri. Takeda and Miyake (1968) also include *P. terraereginae* in the synonymy of *P. tomentosus* and figure the first pleopod of a male from Japan. This differs from the male first pleopod of Australian *P. tomentosus* (see Griffin and Yaldwyn, in press) in having the tip bent at a right angle to the shaft instead of recurved and in having shorter and more numerous setae along the shaft.

Japanese and Indonesian specimens therefore represent a species distinct from *P. terraereginae* and *P. tomentosus*.

Pilumnus nigrispinifer n.sp.

(Figs. 2, 3c, d; pl. 27)

HOLOTYPE: Male (dry), c.l. 50·1 mm, c.w. 60·0 mm, dredged 30 miles east of Bundaberg, Queensland, about 15 fm, D. Hall, 1964 (Aust. Mus. P16440).

PARATYPES: Male (in spirit), c.w. 46·5 mm, same locality data as holotype (Aust.Mus.P16441). One female (dry), c.w. 38·8 mm, trawled near Polmaize Reef and Rock Cod Shoal, off Port Curtis, Queensland, 20 fm, Melbourne Ward collections (Aust.Mus.P16442); two males, same data, c.w. 30·6, 38·6 mm (Qd. Mus. W3061).

DESCRIPTION: Carapace globose, broader than long, anterolateral margins as long as posterolateral margins. Surface of carapace, chelipeds and legs bearing very long, simple, stiff hairs; posterolateral parts of carapace naked; surface of carapace beneath hairs smooth.

Front about one-third greatest width of carapace, divided into two medial lobes edged with small tubercles and separated medially by a very narrow slit, and a narrow lateral lobe terminating in a spine. Orbits bordered by tubercles dorsally and ventrally, two spines arising one above the other at external orbital angle; suborbital border with a closed fissure adjacent to external orbital angle, supraorbital border with two very shallow notches.

Anterolateral margins with three short, sharp, slender, broad-based spines behind external orbital angle. All spines without supplementary spines or tubercles.

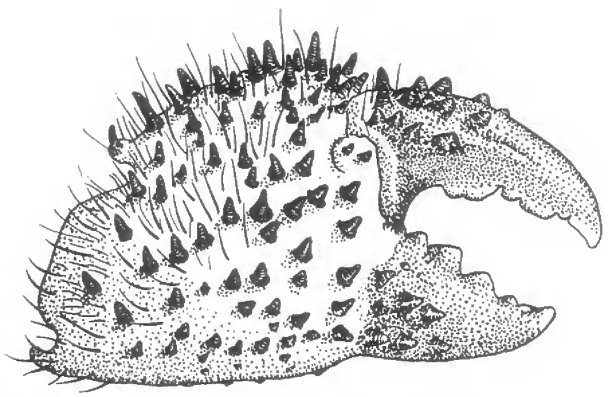

FIG. 2: Major (right) chela of *Pilumnus nigrispinifer* n. sp. (holotype, male), outer aspect.

Subhepatic regions with several tubercles, one larger than others close to margin and visible in dorsal view behind external orbital angle. Suborbital regions with a group of tubercles adjacent to basal antennal article.

Third maxillipeds minutely granular.

Chelipeds spinous and hairy. Merus with a distal subdorsal spine and a row of small, sharp tubercles along anterodorsal and anteroventral edges; a few long hairs on lateral surface distally. Carpus with long sharp spines in longitudinal rows on dorsal and lateral surfaces and long hairs arising between the spines. Palms of both chelae bearing long hairs over more than half outer surface and with stout sharp spines more or less in about eight longitudinal rows over whole of surface, dorsal rows further apart and comprising longer and more slender spines; blunt tubercles along ventral edge towards inner surface. Both fingers of both chelae with sharp tubercles extending in rows on to outer surface, three rows of longer spines on dorsal surface of dactyls. Inner cutting edge of fingers with broad blunt teeth.

Ambulatory legs short and stout, all surfaces covered by long lairs but without tubercles or spines.

Abdomen of male with last segment very narrowly subtriangular, apically rounded.

First pleopod of male proximally stout and curved, otherwise straight, slender and tapering abruptly apically, aperture terminal, abdominal, groove wholly abdominal, a line of hairs along lateral surface terminating close to tip as diffuse tuft, a few hairs on medial surface alongside aperture.

Colour: Upper surfaces of body and of chelipeds and legs pale rusty red to orange, under surfaces of body slightly paler, under surfaces of appendages pale yellow to buff. Spines on chelipeds dark chocolate-brown to black, fingers also dark brown to black, edges of teeth and tips of fingers pale yellow. Hairs brown to yellow.

Remarks: This species is immediately distinguished by its large size and the long black spines on the chelipeds. In many features there is a very close similarity between *P. nigrispinifer* and *P. sinensis* Gordon* from Hong Kong (Gordon, 1931). These similarities include the general shape, armature and hairiness of the carapace, chelipeds and legs, the shape of the abdomen and the straight first pleopod in the male. Comparison of *P. nigrispinifer* with the original descriptions of *P. sinensis* and a specimen recently collected by the Fisheries Research Station, Hong Kong (male, c.w. 39·6 mm, South China Sea, 20°48.0′N., 112°31.5′E. to 20°44.0′N., 112°31.0′E., Granton trawl at 39–40 fm on sandy

*The first description of this species was published by Gordon in 1931 (*Ann. Mag. nat. Hist.*, ser. 10 vol. 6, pp. 523–4). The two descriptions differ slightly in detail and are both headed "*Pilumnus sinensis* sp.n.'

mud with starfish and sponges, 8.xii.1963, Aust.Mus. P16443) shows that the two species differ in the following features. In *P. nigrispinifer* the median frontal lobes have a straighter edge, they do not project so far forward and are separated by a very narrow fissure (not a V–shaped notch), the suborbital border bears tubercles only (not spines medially and tubercles laterally), the spines on the carpus and palm of the chela are straight (not curved), they are very short on the ventral edge of the palm and there is no difference in the number of spines on the palm between males and females. Finally, the tip of the first pleopod in the male tapers to a blunt point in *P. nigrispinifer* but is obliquely subtruncate in *P. sinensis*. Gordon states that the carapace bears long hairs anteriorly; they actually occur also mid-dorsally on the posterior half as in *P. nigrispinifer*.

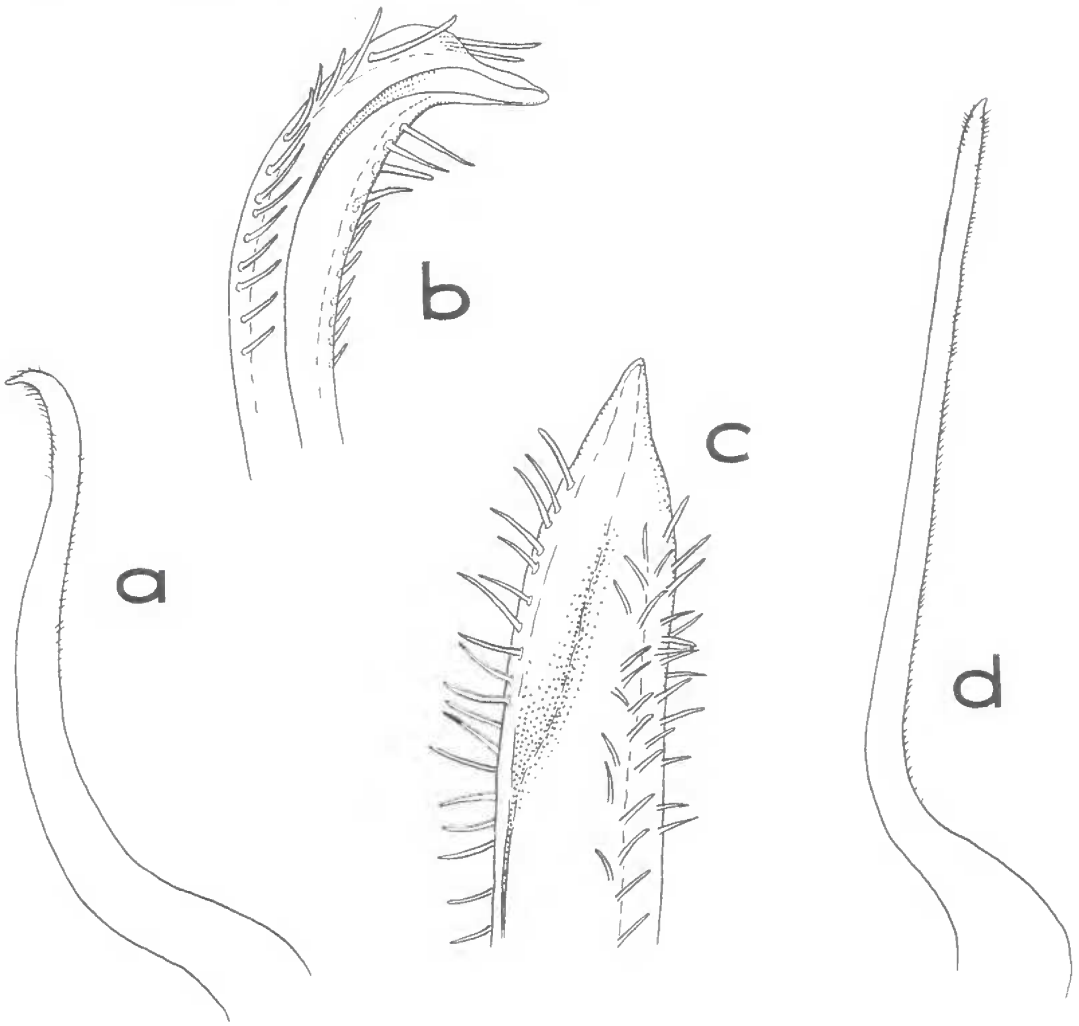

FIG. 3: Male first pleopod of *Pilumnus terraereginae* Haswell (male c.w. 15·7 mm, Aust. Mus. P4207) (a, b) and *Pilumnus nigrispinifer* n.sp. (paratype, male, c.w. 46·5 mm, Aust. Mus. P16441) (c, d). a, d, whole pleopod, sternal aspect; b, c, tip in abdominal aspect.

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